

# **BEST FIT FOR MISSION SUCCESS**

## **ALIGNING DEVELOPMENT PROCESSES**

### **WITH MISSION CLASSIFICATIONS**

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Agility to Innovate, Strength to Deliver



**Ball Aerospace  
& Technologies Corp.**

- “Leading with D” Challenge
- Summary Considerations
- Notable Insights
- Mission Class C/D Execution
- Development Process Alignment





# Leading With D Challenge

- **Mission Assurance Improvement Workshop Shaped**
  - TOR-2010(8591)-18: Mission Assurance Program Framework
  - TOR-2011(8591)-21: Mission Assurance Guidelines for A-D Mission Risk Classes
  - TOR-2013-00294: Key Considerations for Mission Success for Class C/D Missions
    - *Leading with D mandated, Survey Driven*
- **Survey Inclusive and Questions Cast a Wide Net**
  - **8 Companies, 4 NASA Centers, 4 DoD agencies**



## Leading with D Surveys and Products



# Summary Considerations (Common Themes)

Category	Class C/D Consideration
<b>Mission Success</b>	<b>Threshold Requirements</b> - Cost—Schedule—Technical (Threshold) —Mission Success - Success Criteria, Not Process
<b>Risk</b>	<b>Programmatic intolerant, Goals to Threshold Tolerance</b> - Bound Risk - Selective Yellow/Red Mitigation - Experienced Leadership, Delegated Authority
<b>Standards</b>	<b>Best Practices Dependence</b> - Standards Intent - CDRLs Lean/Limited - Contractor Transparency Insight
<b>Processes</b>	- <b>Execution:</b> Pinpoint High Risk/Audit Others - <b>Risk:</b> Technical Bounding, Supplier Sustainability - <b>Triage:</b> Collaboration, Risk Impact
<b>“Winners”</b>	- <b>Management:</b> Empowered Small Dynamic Teams, Continuity, Transparency - <b>Product:</b> Heritage, Burn-In, Simplicity, Subcontractor Reliance, System Redundancy
<b>“Losers”</b>	- <b>Management:</b> Autocratic Pressure, Unstable Budgets, Low Perceptivity Test - <b>Product:</b> “Sunny Day” TAYF, Stacked Up Margins

**Considerations Establish the Roadmap for C/D Execution**



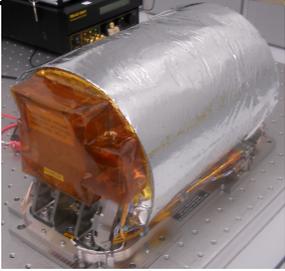
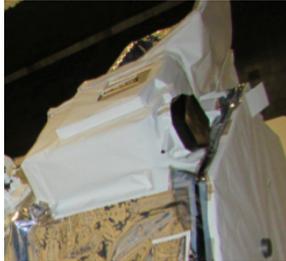
## Notable Insights (Independent Perceptions)

- **Process Tailoring:** (Who, What, When, Where) not (HOW)
- **Class A&B insurance:** Constant Failure Rate Assurance
- **Redundancy:** System, Dissimilar Redundancy & Graceful Degradation
- **Risk:** All Risks Assessed, Difference Mitigation Thresholds
- **Reviews:** Unbounded to Risk Profile Exploring Unknowns
- **CDRLs:** Risk Insight and Development
- **MA:** Process Integrity Focused
- **Opportunity:** Constraint Innovation
- **Decisions:** Quick Reasoned Decisions
- **Expectations:** Contractor and Customer Expectations Set at Award

**Notable Insights Highlight Core Implementation Principles**



# Mission Class C/D Execution Examples

	Restricted	GRACE-FO	CAVIS	TEMPO
<b>Mission / C/D Theme</b>	 <ul style="list-style-type: none"> <li>• Mission System               <ul style="list-style-type: none"> <li>○ Space Vehicle</li> <li>○ Ground</li> <li>○ Launch</li> </ul> </li> </ul>	 <ul style="list-style-type: none"> <li>• Interferometer</li> <li>• JPL</li> <li>• 1 Yr.</li> <li>• Laser Ranging</li> </ul>	 <ul style="list-style-type: none"> <li>• Sounder</li> <li>• DigitalGlobe</li> <li>• 7.25 Yr.</li> <li>• Enhance Imaging</li> </ul>	 <ul style="list-style-type: none"> <li>• Spectrometer</li> <li>• NASA Langley</li> <li>• 2 Yr.</li> <li>• Urban Pollution</li> </ul>
<b>Mission Success</b>	<ul style="list-style-type: none"> <li>• Discrete Demo</li> </ul>	<ul style="list-style-type: none"> <li>• TPM Thresholds</li> </ul>	<ul style="list-style-type: none"> <li>• Hosted Payload</li> </ul>	<ul style="list-style-type: none"> <li>• Commonality Driven</li> </ul>
<b>Risk</b>	<ul style="list-style-type: none"> <li>• Class (C-D)</li> <li>• L3/L2 EEE</li> </ul>	<ul style="list-style-type: none"> <li>• Class (D)</li> <li>• L3 EEE</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial (B)</li> <li>• L2 EEE</li> </ul>	<ul style="list-style-type: none"> <li>• Class (C)</li> <li>• L3/L1 Common</li> </ul>
<b>Standards</b>	<ul style="list-style-type: none"> <li>• Best Practices</li> <li>• CDRLs (5)</li> </ul>	<ul style="list-style-type: none"> <li>• Best Practices</li> <li>• CDRLs (6)</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial</li> <li>• CDRLs (6)</li> </ul>	<ul style="list-style-type: none"> <li>• Best Practices</li> <li>• CDRLs (26)</li> </ul>
<b>Processes</b>	<ul style="list-style-type: none"> <li>• Infant Mortality</li> </ul>	<ul style="list-style-type: none"> <li>• Infant Mortality</li> </ul>	<ul style="list-style-type: none"> <li>• EOL Margin</li> </ul>	<ul style="list-style-type: none"> <li>• Infant Mortality</li> </ul>
<b>Winners</b>	<ul style="list-style-type: none"> <li>• Empowered</li> <li>• High Heritage</li> </ul>	<ul style="list-style-type: none"> <li>• Partnership</li> <li>• Capability Based</li> </ul>	<ul style="list-style-type: none"> <li>• Partnership</li> <li>• High Heritage</li> </ul>	<ul style="list-style-type: none"> <li>• Partnership</li> <li>• Common Buys</li> </ul>

**Ball Aerospace Product Class 3 Programs Align with C/D Themes**



# Development Process Alignment

- “Leading with D” Challenge Met
- Considerations/Insight Focuses “What Works”
- Demonstrated Success
- Emphasizes a Balanced Risk Approach with Distinct Process and Product Baselines

## Bob Manthy, Ball Aerospace

— Program Process Tailoring

## Bryan Gray, Raytheon

— Engineering Mission Success

